

NOV 10 2009

Yuuki INOUE, Application No. 10/804,368
Page 2

Dkt. 2271/71533

Listing of Claims

The following listing of claims will replace all prior versions, and listings, of claims in the subject application:

Claims 1-33 (canceled).

34. (currently amended) An image processing apparatus comprising:

a color conversion part performing color conversion among a plurality of image forming apparatuses, including a first printer and a second printer; and

a plurality of color profiles whereby colors of images formed by the respective image forming apparatuses may be made effectively approximate each other through color conversion performed by said color conversion part with the use of the color profiles,

wherein said color conversion part uses a color profile from the color profiles to convert input color data, in a RGB color space, to converted color data, in a device-dependent CMYK color space of said second printer, for reproducing colors obtained by said first printer by applying said input color data, each of said input color data and said converted color data corresponding to a same color in a predetermined device-independent color space which does not depend on apparatus types, the color profile being generated by a process including:

(a) producing, in a computer, color patch data ~~[[from]]~~ by uniformly dividing a RGB color space;

(b) obtaining ~~corresponding~~ color patches corresponding to the color patch data in an image formed by a first image forming apparatus of an apparatus type of said first printer ~~according to said color patch data in the RGB color space;~~

Yuuki INOUE, Application No. 10/804,368
Page 3

Dkt. 2271/71533

(c) measuring ~~coordinate-values~~ color of the color patches in the predetermined device-independent color space;

(d) obtaining a relationship, for each color patch, between a first color space which depends on the apparatus type of the first printer and the predetermined device-independent color space, based on a measurement result of (c);

(e) obtaining a relationship between the predetermined device-independent color space in an image formed by a second image forming apparatus of an apparatus type of said second printer and a second color space which depends on said apparatus type of said second printer; and

(f) calculating a coordinate value in the second color space which depends on the apparatus type of said second printer for each color patch whereby color of an image formed by said second printer has a color difference which is effectively reduced from color of an image formed by said first printer, according to the relationship between the predetermined device-independent color space in an image formed by said second printer and the second color space which depends on the apparatus type of said second printer, obtained in (e),

wherein color in an image formed by said second printer using said device-dependent input color data is visually equal to color of an image formed by said first printer using said converted device-dependent color data.

35. (original) The image processing apparatus as claimed in claim 34, wherein:

said plurality of color profiles are provided from actually measuring color of an image formed by one of said plurality of image forming apparatuses, and creating a color profile whereby color of an image effectively approximating the measured color is formed by another of

Yuuki INOUE, Application No. 10/804,368
Page 4

Dkt. 2271/71533

said plurality of image forming apparatuses approximately equal thereto.

36. (original) The image processing apparatus as claimed in claim 34, wherein:

said plurality of color profiles comprise color profiles whereby a color difference in a color space which does not depend on apparatus types between images formed by the image forming apparatuses may be made to effectively approximate each other.

37. (original) The image processing apparatus as claimed in claim 36, wherein:

said color space which does not depend on apparatus types comprises any one of an LAB color space, an XYZ color space and an LUV color space defined by CIE.

38. (original) The image processing apparatus as claimed in claim 34 comprising a printer driver provided in a host computer which outputs printing information to the image forming apparatus.

39. (original) The image processing apparatus as claimed in claim 34 comprising a controller provided in one of the plurality of image forming apparatuses which forms an image having color which is made to effectively approximate color of image formed by another of said plurality of image forming apparatuses with the use of the color profile.

Claim 40 (canceled).

41. (original) The image processing apparatus as claimed in claim 34, further

Yuuki INOUE, Application No. 10/804,368

Dkt. 2271/71533

Page 5

comprising a part selecting a color profile to be applied from among the plurality of color profiles.

42. (original) The image processing apparatus as claimed in claim 41, wherein:

a host computer which provides printing information to the image forming apparatus comprises said part selecting a color profile to be applied from among the plurality of color profiles.

43. (original) An image forming apparatus comprising:

the image processing apparatus claimed in claim 34; and

an image forming part which forms a visible image on a recording medium based on image information output from said image processing apparatus.

Claims 44-47 (canceled).

48. (new) The image processing apparatus of claim 34, wherein the image formed by the second image forming apparatus corresponds to the color patches produced in (a).

49. (new) The image processing apparatus of claim 34, wherein the first color space which depends on the apparatus type of the first printer is a CMYK color space and the first color space which depends on the apparatus type of the first printer is different from the second color space which depends on the apparatus type of the second printer in that a color of at least one color material of the first printer is different from a color of a corresponding color material

Yuuki INOUE, Application No. 10/804,368
Page 6

Dkt. 2271/71533

of the second printer.

50. (new) The image processing apparatus of claim 34, wherein a type of color material of the first printer is one of ink and toner and a type of color material of the second printer is the other of ink and toner.

51. (new) An image processing apparatus comprising:
a color conversion part; and
a color profile, the color profile having been produced according to the steps of:
producing color patch data by uniformly dividing a RGB color space;
sending the color patch data to each of the first printer and second printer for printing color patch images corresponding to the color patch data by each printer;
measuring a color of the color patch images printed by the first printer in a device independent color space to obtain a first relationship between the color patch data and the color of the corresponding color patch images printed by the first printer;
measuring a color of the color patch images printed by the second printer in the device independent color space to obtain a second relationship between the color patch data and the color of the corresponding color patch images printed by the second printer; and
calculating the color profile using the first relationship and the second relationship,
wherein

the color conversion part is configured to convert original color data to converted color data according to the color profile, the converted color data being sent to the second printer for printing a corresponding image having color that is visually equal to color of an image printed by

Yuuki INOUE, Application No. 10/804,368
Page 7

Dkt. 2271/71533

the first printer corresponding to the original color data.

52. (new) A method for producing a color profile for performing color conversion between a first printer and a second printer, the method comprising the steps of:

producing color patch data by uniformly dividing a RGB color space;

sending the color patch data to each of the first printer and second printer for printing color patch images corresponding to the color patch data by each printer;

measuring a color of the color patch images printed by the first printer in a device independent color space to obtain a first relationship between the color patch data and the color of the corresponding color patch images printed by the first printer;

measuring a color of the color patch images printed by the second printer in the device independent color space to obtain a second relationship between the color patch data and the color of the corresponding color patch images printed by the second printer;

calculating a color profile using the first relationship and the second relationship; and

using the color profile for converting original color data to converted color data for sending to the second printer for printing a corresponding image having color that is visually equal to color of an image printed by the first printer corresponding to the original color data.

53. (new) The method of claim 52, wherein the color profile is calculated using the first relationship and the second relationship according to the steps of:

obtaining a reverse of the second relationship for determining input color data for sending to the second printer based on desired output color of images printed by the second printer measured in the device independent color space;

Yuuki INOUE, Application No. 10/804,368
Page 8

Dkt. 2271/71533

determining, using the reverse of the second relationship, corrected color patch data for sending to the second printer corresponding to the color of the color patch images printed by the first printer measured in the device independent color space; and

comparing the color patch data sent to the first printer to the corrected color patch data.

54. (new) The method of claim 52, wherein the RGB color space is uniformly divided by skipping an equal number of data between extracting data.

55. (new) The method of claim 52, wherein the original color data is in a RGB color space and the converted color data is in a CMYK color space.

56. (new) The method of claim 52, wherein the original color data is in a RGB color space and the converted color data is in a RGB color space.

57. (new) A computer readable medium tangibly embodying a program of instructions executable by a computer to perform a method for color conversion between a first printer and a second printer using a color profile, the method comprising the steps of:

producing color patch data by uniformly dividing a RGB color space;

sending the color patch data to each of the first printer and second printer for printing color patch images corresponding to the color patch data by each printer;

measuring a color of the color patch images printed by the first printer in a device independent color space to obtain a first relationship between the color patch data and the color of the corresponding color patch images printed by the first printer;

Yuuki INOUE, Application No. 10/804,368

Dkt. 2271/71533

Page 9

measuring a color of the color patch images printed by the second printer in the device independent color space to obtain a second relationship between the color patch data and the color of the corresponding color patch images printed by the second printer;

calculating the color profile using the first relationship and the second relationship; and

using the color profile for converting original color data to converted color data for sending to the second printer for printing a corresponding image having color that is visually equal to color of an image printed by the first printer corresponding to the original color data.